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Practical Experience of the Mini-CEX in Undergraduate Trainees

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Abstract

Mini-clinical evaluation exercise in UK medical education has grown in recent years. We conducted Mini-CEX as a clinical evaluation method to assess its' feasibility and students' acceptance in undergraduate trainees. They were assessed by valid and reliable rating scale.Then, their satisfaction and experiences were assessed. Trainees' satisfaction of mini-CEX was 76.8±12.5 (of 100). They mentioned that this method could improve their motivation, but it was time-consuming. The results implicate that undergraduate students were satisfied with mini-CEX outcome. But they worried about its' long process. We recommend shortening its' process by dividing it into some parts in order to use mini-CEX as a lifelong learning.

Keywords: Mini-CEX, undergraduate trainees, feasibility, acceptance;

1. Introduction

There is increasing attempt to recognize workplace-based assessment tools in the training of clinical undergraduates and postgraduates [(1)]. The Accreditation Council for Graduate Medical Education (ACGME) emphasizes on actual educational outcomes in the accreditation of residency programs. Some concerns regarding the new graduate's ability to meet the demands of today's practice environment result in this attention. Previously, accreditation was focused on written objectives, regardless that, just as giving a resident the opportunity to learn does not ensure that he or she will learn. So, nowadays, the accreditation process is focused on the assessment of program outcomes [(2)].

The Foundation Programme Curriculum established to use a series of assessment tools such as mini-CEX [(3)]. The mini-Clinical Evaluation Exercise (mini-CEX) is a widely used instrument for workplace-based assessment, demonstrated in several studies to improve feedback to trainees and enhance workplace learning [(1)]. It is a rating scale developed by the American Board of Internal Medicine (ABIM) in the 1990s to assess six core competencies

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of residents which include: medical interviewing skills, physical examination skills, humanistic qualities/professionalism, clinical judgment, counseling skills, organization and efficiency. Each encounter lasts for about 15-25 minutes, including the time spent on observation and the feedback given to the trainee [(4)].

A main component of the assessment process is offering feedback, which highlight both strengths and weaknesses will enhance learning and development [(3)]. Mini-CEX is now a requirement of trainee evaluation in the National Health Service (NHS), UK (Modernizing Medical Career, MMC, NHS) [(4)]. The purpose of this study was to describe practical experience of the Mini-CEX in undergraduate trainees. We aimed to assess its' feasibility and trainees' acceptance in undergraduate trainees.

2. Methods and materials

2.1. Participants & settings

This one-group quasi-experimental study was conducted on 33 undergraduate midwifery trainees in the academic hospitals of Mashhad University of Medical Sciences (MUMS)/ Iran. This study was approved by the Vice Presidency for Research of MUMS and written informed consents were obtained from all participants.

2.2. Inclusion and exclusion criteria

Inclusion criteria were as follows: trainees attending in the maternity care unit, attending in the meeting of introducing mini-CEX method. Trainees evaluated fewer than twice for each of selected techniques (medical interviewing skills, physical examination skills, humanistic qualities/professionalism, clinical judgment, counselling skills, organization and efficiency) excluded in mini-CEX method.

2.3. Methods

At first, a meeting was held to introduce mini-CEX technique’s principles and tools to the trainees and their assessors. The 15-minute sessions were also being held as a reminder for them at the beginning of each training by the research team. Trainee evaluation was conducted according to her request. The process followed as the researcher and assessor placed behind the trainee without any interference (except in necessary situations) to observe trainee's mentioned procedural skills directly and rate the trainee using reliable and valid rating scales simultaneously. Finally and immediately, verbal and written feedbacks were offered to the trainee and she could discuss about the awarded scores. Since the evaluation tools were identical for trainees in different semesters, the assessors considered competency levels expected in the evaluation of any special semester.

The frequency of any technique by each trainee and time taken were documented. Trainees' satisfaction and their experiences were obtained at the end clinical evaluation by a questionnaire.

2.4. Tools

Mini-CEX rating scale included 27 statements in several parts: medical interviewing skills, physical examination skills, humanistic qualities/professionalism, clinical judgment, counseling skills, organization and efficiency. Each statement evaluates trainees' ability to do mentioned skills in 1-10. In the ten-point rating scale, 1–2 was labeled ‘poor', 3–5 ‘moderate', 6–8 ‘good', and 9-10 'excellent'. Total score of this rating scale was 270. Reliability of applied rating scale was obtained using inter-rater reliability (0.92) and the validity assessed by Content Validity Index (CVI) which were as follows: taking history rating scale (CVI= 0.98).

The satisfaction questionnaire of mini-CEX prepared by extensive literature review, approved by CVI = 0.81 and alpha-Cronbach reliability (a=0.94). These questionnaire consists of 10 domains (fairness, consistence with learning objectives, suitability, adequate time, feasibility, promoting skills, objectiveness, stressfulness and interest in evaluation method, adequate number of assessment for each skill) in a 1-5 scale (completely disagree (1) to

completely agree (5)) and an open question. But the score of domain "stressfulness" was calculated reversely (completely disagree (5) to completely agree (1)) in total score of evaluation. Minimum and maximum score of satisfaction with mini-CEX questionnaire was 17-85. To provide better understanding, total[†] and domains'[‡] scores of satisfaction were calculated on the 100 scale. Higher scores indicated greater satisfaction with the mentioned methods about total and all domains' score, except "stressfulness" which was reverse.

2.5. Analysis

We used SPSS-11.5 to analyze data. Descriptive (mean, S.D,) and analytic statistics including Pearson coefficient were applied.

3. Results

We collected 67 assessments from 33 trainees who were in different semesters. Mean of trainees' score of mini-CEX method was 16.8±1.7 (of 20). Mean of trainees' satisfaction with mini-CEX method was 76.8±12.5 (of 100). The most satisfactory domain of mini-CEX method was being "objective", 85.5±18.9. In contrast, the least one in mini-CEX method was "Adequate number of assessment for each skill" 64.8±27.9 (table 1). There was no significant correlation between trainees' score of rating scale and their satisfaction score (P=0.973, r= -0.06).

All competencies of mini-CEX were assessed at least 2 times. 54.2 % of the trainees had comments about adequate number of assessment for each skill. They were among dissatisfied or partially satisfied trainees with just 2 -times assessment. Most of them believed that 3 encounters is optimal, but others said that 4, 5 or the adequate encounters determined by trainees' desire. Since all domains were assessed together, time average taken was rather long, 33 minutes (25 minutes for observation and 8 minutes for giving feedback). Some of the trainees expressed opinions about mini-CEX method in response to an open question of the satisfactory questionnaire. The comments are: "this method is very useful in learning and enhances trainees' motivation". They also added: "it is a true, not based on teachers' presumption towards trainees. So it eliminates trainees' dissatisfaction with the discrimination created by instructors". In these opinions just 2 trainees mentioned: "mini-CEX makes more stress".

4. Table

Table 1. Frequency and mean of trainees' satisfaction with mini- clinical evaluation exercise method

	Satisfaction [Number (percent)]					
	Completely disagree	Partially disagree	No comment	Partially agree	Completely agree	Mean satisfaction
Evaluation methods	mini -CEX	mini -CEX	mini -CEX	mini -CEX	mini-CEX	
Field						
Fairness	1(3.0)	4(12.1)	0(0.0)	20(60.6)	8(24.2)	78.2±20.2
Consistence with learning objectives	0(0.0)	0(0.0)	10(30.3)	12(36.4)	11(33.3)	76.1±15.0
suitability	0(0.0)	3(9.1)	1(3.0)	20(60.6)	9(27.3)	81.2±16.5
Adequate time	2(6.1)	2(6.1)	0(0.0)	21(63.6)	6(18.2)	75.1±21.8
Feasibility	2(6.1)	3(9.1)	1(3.0)	21(63.6)	6(18.2)	75.8±21.1
Promoting skills	1(3.0)	2(6.1)	4(12.1)	12(36.4)	14(42.4)	80.1±16.1
Objectiveness	1(3.0)	1(3.0)	2(6.1)	13(39.4)	16(48.5)	85.5±18.9
stressfulness	8(24.2)	8(24.2)	4(12.1)	11(33.3)	2(6.1)	54.5±26.6

[†] Total score of Satisfaction with clinical evaluation method on Percentage scale = [raw score/115] × 100

[‡] Domain score of Satisfaction with clinical evaluation method on Percentage scale = [raw score of a domain /maximum score of the same domain] × 100

interested in applying method	2(6.1)	2(6.1)	5(15.2)	15(45.5)	9(27.3)	75.5±19.9
Adequate number of assessment	4(12.1)	9(27.3)	2 (6.1)	11(33.3)	7(21.2)	64.8±27.9

5. Discussion

This study showed that undergraduate midwifery trainees were relatively satisfied with mini-CEX. Some strengths of this method are: its motivational impact to study due to objectiveness, and relatively positive comments about feasibility. Most workplace-based assessment methods are not easy to implement, but it appeared possible to incorporate this assessment into the day's work. Although it is relatively time-consuming according to some trainees, successive assessment of all competencies in mini-CEX method may establish this idea.

A small number of published studies describe the psychometric properties of Mini-CEX. Some suggested four to six Mini-CEX assessments yearly, produced a minimally reliable overall score [(4)]. Since the present study last for just one semester, there was no enough time to assess the trainees in this way. The main cause of the unreliability is variable assessor stringency, which contributes substantially to score variation. This means that some assessors tend to score highly while the others score low. This finding can be converted by some suggestions: assessor training, 'score adjustment' for assessor stringency, or a change to the scale against which trainees are measured [(1)]. So we have been trying to optimize the reliability of this study by using trained assessors.

Weller et. al (2009) reported trainees' satisfaction with Mini-CEX, 7.3 (of 10) which is consistent with our study. They also reported both strengths and weaknesses in the Mini-CEX in anesthesia, which is in consistent with our results [(5)].

An objective tool can eliminate subjective instructors' judgments [(6-7)]. Unfortunately, one of the problems in evaluation process is lack of an objective tool [(8)]. Surprisingly, the most satisfactory domain in mini-CEX method was objectiveness. The best explanation for this can be trainees' opinion which emphasizes on this feature "trainees are not judged according to the instructors' previous assumptions". Additionally, determination of performance process, scoring and results interpretation of mini-CEX lead to complete satisfaction for trainees with objectiveness domain [(9)]. In contrast, the least satisfactory domain in MINI-CEX method related to "adequacy of assessment numbers for each skill". Most of the trainees proposed 3 times for each skill.

About being interested in applying clinical evaluation method, 72.8% of the trainees were interested in applying mini-CEX. Although based on the change theory, people resist against acceptance of new things [(10)], it was surprising that trainees were eager to apply mini-CEX method. Since being interested in reusing a method, may be the indicator of trainee's satisfaction with it.

Feasibility of mini-CEX was good because there is no need to any special settings or tools in these methods. The other one was "stressfulness" of these methods. The reason may be due to direct observation in mini-CEX encounter. However, stressfulness which is caused by the evaluation can be useful, because if it is done in proper time, it can provide an opportunity for amendment [(11)].

The results implicate that undergraduate trainees were satisfied with mini-CEX outcome. But they were worried about its' long process. So, we recommend to shorten its' process by dividing it into some different parts such as interviewing skills and physical examination. In this way, we can use mini-CEX as a lifelong learning, as the trainees state it.

This can lead to identify competent people, improve educational program and teaching methods in classroom and clinical settings, manage facilities and finally promote clinical competency of midwifery graduates. The study findings can be as a guideline for instructors, managers and the university to plan more acceptable, proper and objective clinical evaluation methods which can elevate trainees' clinical skills.

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